IN THE SPECIFICATION:

Please amend the specification as follows:

Please substitute the paragraph beginning at page 1, line 11, and ending on page 2, line 1, with the following.

-- A conventional anti-vibration apparatus employs arrangements as shown in Figs. 18A to 18C. In the arrangements shown in Figs. 18A to 18C, as an anti-vibration element, one which utilizes the displacement of an elastic spring 1760 (Fig. 18A: spring support), one which utilizes the repulsive forces of homopolar magnets 1770 (Fig. 18B: repulsive magnet support), and one which utilizes the damping effect of [[a]] rubber seal cylinders 1790 (Fig. 18C: rubber seal cylinder support) are respectively inserted between a base 1720 where a semiconductor manufacturing apparatus such as an exposure apparatus is placed and a worktable 1710 where a driving element such as an X-Y stage and other precision components and precision apparatuses are placed. Vibration propagating from the base 1720 is absorbed by such an anti-vibration element, so that the worktable 1710, or the entire exposure apparatus, or the like, is vibration-controlled. --

Please substitute the paragraph beginning at page 2, line 7 and ending at line 9, with the following.

-- An example of such an anti-vibration apparatus is disclosed ~~inpatent reference (~~ in Japanese Patent Laid-Open No. 08-270725 [[)]]. --

Please substitute the paragraph beginning at page 5, line 3 and ending at line 9, with the following.

-- a second magnet unit including a pair of second permanent magnets, the pair of second permanent magnets being arranged to interpose the first permanent magnet in noncontact with the first permanent magnet such that the same magnetic poles of the first and second permanent ~~magnet~~ magnets oppose each other. --

Please substitute the paragraph beginning at page 5, line 9 and ending at line 14, with the following.

-- wherein sizes of the first and second magnet units are set such that no force acts between the first and second magnet units in a relative ~~position~~ positional range between the first and second magnet units in a direction perpendicular to a direction in which the first magnet unit supports the support target. --

Please substitute the paragraph beginning at page 6, line 1 and ending at line 3, with the following.

-- Fig. 1 is a view showing an overall arrangement in which support units and Z fine movement linear motors are arranged between a base plate and a worktable; --

Please substitute the paragraph beginning at page 6, line 4 and ending at line 8, with the following.

-- Fig. 2 is a view showing the layout of three support units, an X fine movement linear motor (one), Y fine movement linear motors (two), and ~~the~~ Z fine movement linear motors (three) that are arranged on the base plate; --

Please substitute the paragraph beginning at page 7, line 4 and ending at line 6, with the following.

-- Fig. 7 is a view for explaining a state wherein an X stage and an X-Y stage for generating a moving load are arranged on the worktable; --

Please substitute the paragraph beginning at page 9, line 1 and ending at line 15, with the following.

-- Fig. 2 is a view showing the layout of the three support units 300, an X fine movement linear motor (LM) 400 (one), Y fine movement linear motors 500 (two), and ~~the~~ Z fine movement linear motors 600 (three) that are arranged on the base plate 100. The three support units 300 generate only support forces in the respective axes (X, Y, and Z directions), but substantially no force in response to displacement in directions other than the support direction, thus realizing an active anti-vibration performance. The six fine movement linear motors 600 aid the support units 300 and perform the control operation of holding the position and posture so that the worktable 200 is prevented from displacing largely from a predetermined position. --

Please substitute the paragraph beginning at page 10, line 9 and ending at line 22, with the following.

-- The Y fine movement linear motor 500 has two Y yoke fixing plates 501, and a Y yoke 502 is provided to the Y yoke fixing plates 501. The Y yoke 502 has two-pole permanent magnets (Y magnets) 503 magnetized in the x direction (direction of the thickness of the Y yoke). The permanent magnets 503 (Y magnets) and a Y coil 504 face each other in a noncontact manner. The flat-track-shaped Y coil 504 is supported by a Y coil frame 505. The Y yoke fixing plates 501 ~~is~~ are fixed to the worktable 200, while the Y coil frame 505 is fixed to the base plate 100. When a current is supplied to the Y coil 504, a Y Lorentz force 510 in the Y direction is generated between the Y coil 504 and the Y permanent magnets 503. --

Please substitute the paragraph beginning at page 12, line 3 and ending at line 14, with the following.

-- When the X, Y, and Z coordinate axes of the support unit 300 and forces Fx, Fy, and Fz generated in the directions of the axes are plotted along the directions of the coordinate system shown in Figs. 4A and 4B, the relationships between the displacements and forces form characteristic curves shown in graphs 41a to 41c of Fig. 4A. The axes of ~~abscissa~~ the abscissas of the respective characteristic curves represent the displacements of the first magnet unit 302 in the X, Y, and Z directions, and ~~their~~ axes of ~~ordinate~~ the ordinates represent the forces Fx, Fy, and Fz that act on the first permanent magnet 302. --

Please substitute the paragraph beginning at page 13, line 1 and ending at line 7, with the following.

-- The "spring characteristics" refer to the characteristics with which, when the displacement increases, a force acts in a direction to restore the displacement. The "counter-spring characteristics" refer to the characteristics with which, when the displacement increases, a force acts in a direction to further increase the displacement. --

Please substitute the paragraph beginning at page 13, line 24, and ending on page 14, line 20, with the following.

-- The graph 41b of Fig. 4B shows the relationship between the displacement in the Y direction of the first permanent magnet 302 generated when it moves along the surfaces of the second permanent magnets 303, and the Y-direction force (Fy), and includes a region ("Fy zero region" in the graph 41b of Fig. 4B) where the Y-direction force (Fy) becomes substantially zero in a certain displacement segment in the Y direction. If the displacement in the Y direction further increases, exceeding the Fy zero region, a Y-direction force (Fy) is generated in the direction to increase the displacement. Similarly, if the displacement decreases, exceeding the Fy zero region, a Y-direction force (Fy) is generated in the direction to decrease the displacement. The characteristic feature of the characteristic curve of the graph 41b of Fig. 4B resides in that it has a displacement region where the force in the Y direction is substantially zero, and that the vibration transmissibility is substantially zero in this region so that no force is generated in the Y

direction. Accordingly, the support units 300 desirably support the worktable 200 by arranging their first permanent magnets 302 such that they are located within the Fy zero regions. --

Please substitute the paragraph beginning at page 15, line 23, and ending on page 16, line 21, with the following.

-- Since the permanent magnets (302 and 303) show the spring characteristics as described above, the characteristics of the displacement in the direction of the gap (X direction) as the function of the force (Fx), which are obtained when the yoke 305 is attached, are the synthesis of the "counter-spring characteristics" and "spring characteristics". When the thicknesses of the yokes 301 and 305 are increased, the counter-spring characteristics become dominant, and the counter-spring characteristics are exhibited as a whole, so that the characteristics indicated by a broken line 350 in Fig. 4B are obtained. On the other hand, when the yokes 301 and 305 are made thin or eliminated, the spring characteristics become dominant, as a whole, and the characteristics indicated by a solid line 360 in Fig. 4B are obtained. When the yoke thicknesses are appropriately adjusted and designed, characteristics, as indicated by a solid line 370 in the graph 41c of Fig. 4B, in which the force shows no change in response to a displacement and the magnitude of the force itself is zero, are obtained. Therefore, when the support units 300 are formed by appropriately setting the thicknesses of the yokes 301 and 305, the vibration transmissibility can be set to substantially zero. This is desirable as the characteristics of the support unit 300. --

Please substitute the paragraph beginning at page 19, line 17, and ending on page 20, line 6, with the following.

-- According to the above arrangement, an active anti-vibration apparatus having excellent vibration insulating characteristics can be realized, in which the three support units 300, each having the first and second permanent magnets (302 and 303) and yokes 301 and 305, which realize the setting conditions, including the critical position, the Fy zero region, and the yoke thicknesses described with reference to Fig. 4B, generate support forces only in the X-, Y-, and Z-axis directions while generating substantially no force in response to displacements in directions other than the support direction, so that an active anti-vibration performance is realized, and in which, when an unexpected disturbance is applied, a position and posture are held by a combination with weak position control of the six fine movement linear motors based on position measurement of the gap sensors. --

Please substitute the paragraph beginning at page 21, line 10 and ending at line 26, with the following.

-- Three variable support units 380-1, 380-2, and 380-3, six fine movement linear motors (400, 500, and 600), and six gap sensors (550, 560, and 570) are arranged under the worktable 200 (see Figs. 8 and 9). The arrangement of the six fine movement linear motors (400, 500, and 600) is different from that ~~of~~ shown in Fig. 5 and described in the first embodiment, and includes the two X fine movement linear motors 400 (one in Fig. 5) and one Y fine movement linear motor 500 (two in Fig. 5). This is a variation of the arrangement example. The six gap sensors

(550, 560, and 570) measure the position and posture of the worktable 200, and a control unit 1000 (see Fig. 6D) controls the six fine movement linear motors on the basis of the measurement data, so that the position and posture are held. These ~~function~~ functions and ~~effect~~ effects are the same as those of the first embodiment. --

Please substitute the paragraph beginning at page 24, line 3 and ending at line 22, with the following.

-- The driving operation of the motor 668 controls the positions of the second permanent magnets, so that the facing size (Y1+Y2) can be set variably. In position control of the second permanent magnets, a sensor 690 (see Fig. 6E) is provided to the driving system of the motor 668 to correspond to the yoke 605a (or 605b). The sensor 690 detects the ~~moved~~ movement amount (position) of the yoke front portion (605a). A second control unit 1100 drives the motor 668 such that the ~~moved~~ movement amount coincide with a target value, thereby controlling the yoke front portion 605a and yoke rear portion 605b to move to desired target positions. At this time, a control arithmetic operation unit 1400 calculates a deviation in the position information on the basis of the yoke target values and the detection information of the sensor. The control arithmetic operation unit 1400 then generates a motor driving command to set the deviation close to the target value gradually, and outputs it to the driver of the motor 668. --

Please substitute the paragraph beginning at page 26, line 9 and ending at line 19, with the following.

-- In the arrangement including the X stage 705 and X-Y stage 703 shown in Fig. 10, assume that the mass of a body including the worktable 200 and causing no barycentric movement will be denoted as MK, its barycentric coordinates will be denoted as (XK, YK), the mass of the X stage 705 will be denoted as MX, [[a]] barycentric coordinates G1 of the X stage 705 will be denoted as (XXj(t), YXj), the mass of the X-Y stage 703 will be denoted as MXY, and barycentric coordinates G2 of the X-Y stage 703 will be denoted as (XXYj(t), YXYj(t)). --

Please substitute the paragraph beginning at page 29, line 15, and ending on page 30, line 14, with the following.

-- The arrangement of Fig. 12 is different from that ~~of~~ shown in Fig. 11 in that it has a geometric transform unit 1600, and tables (1500-1, 1500-2, and 1500-3) for compensating for errors in the forces, generated by the respective variable support units, with the fine movement linear motors. Errors Δ(Y1j + Y2j) (j = 1 to 3) in the facing sizes of the respective variable support units are input to the tables (1500-1, 1500-2, and 1500-3), and correction support forces ΔF1(t), ΔF2(t), and ΔF3(t) that should be compensated for by the fine movement linear motors are obtained. On the basis of the correction support forces, the geometric coordinate transform unit 1600 generates and outputs fine movement linear motor outputs Fz1m1h, Fz1m2h, and Fz1m3h, equivalent to the correction support forces. As the fine movement linear motors have high response speeds, the errors in the support forces due to control delay, which is caused by setting the yokes variable, can be compensated for effectively. The three variable support units and three Z fine movement linear motors are arranged at different positions. Thus, the respective

Z fine movement linear motors can generate the forces Fz1m1h, Fz1m2h, and Fz1m3h, equivalent to those obtained when the forces ΔF1(t), ΔF2(t), and ΔF3(t) are generated at the positions of the variable support units, through the geometric coordinate transform unit 1600. --

Please substitute the paragraph beginning at page 31, line 7 and ending at line 18, with the following.

-- The support units 300 and variable support units 380 described in the first and second embodiments can exhibit their characteristic features in a vacuum environment as well. In particular, since permanent magnets are mainly utilized as the constituent elements, pollution of the vacuum environment due to friction, or the like, or exhaust of compressed air need not be considered. Therefore, in a particularly highly clean environment in the semiconductor manufacturing process, or the like, any of the above embodiments is suitable as an anti-vibration apparatus for the semiconductor manufacturing apparatus. --

Please substitute the paragraph beginning at page 31, line 20, and ending on page 32, line 6, with the following.

-- An embodiment in which the support units, which are applied to the worktable 200 and described in the first and second embodiments ~~described~~ above, are applied to an exposure apparatus, will be described with reference to Fig. 13. Fig. 13 is a view showing the schematic arrangement of a housing for the exposure apparatus. A projection lens 1340, and a reticle stage 1330 for holding a reticle 1320 as a master and moving and positioning it at a predetermined

position, are arranged on an upper structure 1300. A wafer stage 1360 for moving and aligning a wafer 1350, to which the projection image of the master is to be transferred, at a predetermined position is arranged on a lower structure 1310. --

Please substitute the paragraph beginning at page 35, line 26, and ending on page 36, line 16, with the following.

-- Fig. 16 is a view showing the schematic structure of a housing for an exposure apparatus according to the sixth embodiment. A housing structure for a vacuum chamber 1600 is identical to that described in the fifth embodiment, and a detailed description thereof will accordingly be omitted. The sixth embodiment is different from the fifth embodiment described above in that an extreme ultraviolet (EUV) exposure apparatus is considered as the exposure apparatus, and that the exposure apparatus is used in a vacuum environment. In the vacuum environment as well, variable support units 380 or support units 300 do not use air or rubber, and accordingly, pollution of the vacuum environment by exhaust of air, wear of the rubber, or the like, can be prevented. The support units 300 and variable support units 380 are suitably applied for anti-vibration of the extreme ultraviolet (EUV) exposure apparatus installed in the vacuum chamber 1600. --

Please substitute the heading at page 36, line 17, with the following.

-- <Application to a Semiconductor Manufacturing Process> --.

Please substitute the paragraph beginning at page 36, line 18 and ending at line 22, with the following.

-- A ~~manufacturing~~ process for <u>manufacturing</u> a semiconductor device (e.g., a semiconductor chip such as an IC or an LSI, a CCD, a liquid crystal panel, and the like) using the above exposure apparatus will be described with reference to Fig. 17. --

Please substitute the paragraph beginning at page 36, line 23, and ending on page 37, line 14, with the following.

-- Fig. 17 shows the flow of the overall semiconductor device manufacturing process. In step 1 (circuit design), the circuit of a semiconductor device is designed. In step 2, exposure control data for the exposure apparatus is created based on the designed circuit pattern. In step 3 (wafer manufacture), a wafer is manufactured using a material such as silicon. In step 4 (wafer process), called a preprocess, an actual circuit is formed on the wafer by lithography using the prepared mask and wafer. In step 5 (assembly), called a post-process, a semiconductor chip is formed from the wafer fabricated in step 4. This step includes processes such as assembly (dicing and bonding) and packaging (chip encapsulation). In step 6 (inspection), inspections including <u>an</u> operation check test and <u>a</u> durability test of the semiconductor device fabricated in step 5 are performed. A semiconductor device is completed with these processes, and shipped (step 7). --

Please substitute the paragraph beginning at page 38, line 10 and ending at line 15, with the following.

-- According to the embodiments described above, an anti-vibration technique including a support structure which, while generating a support force in a support direction, suppresses transmission of a force in a direction perpendicular to the support direction, can be provided. --

Please substitute the paragraph beginning at page 38, line 16 and ending at line 20, with the following.

-- According to one embodiment, even when the load conditions (barycentric position, or the like) for the anti-vibration target object change dynamically, the support force of the support structure can be controlled variably, thereby eliminating vibration. --